

**Notice of Allowability**

Application No.

10/785,370

Examiner

Jack Dinh

Applicant(s)

CARLSON ET AL.

Art Unit

2873

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 02/23/04.
2. ☒ The allowed claim(s) is/are 1,2,4,6-13,15-19,23,24,26,27,29,31-38,40-44,48 and 49.
3. ☐ The drawings filed on \_\_\_\_\_ are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some\* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

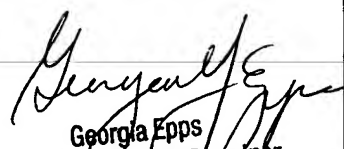
\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.  
**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
6. ☒ CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.
- (a) ☒ including changes required by the Notice of Draftsperson's Patent Drawing Review ( PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
- (b) ☒ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date 0505.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date \_\_\_\_\_
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☒ Interview Summary (PTO-413), Paper No./Mail Date 0505.
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_\_.

  
Georgia Epps  
Supervisory Patent Examiner  
Technology Center 2800

## **DETAILED ACTION**

### *Drawings*

1. New corrected drawings in compliance with 37 CFR 1.121(d) are required in this application because the drawings are informal. Applicant is advised to employ the services of a competent patent draftsman outside the Office, as the U.S. Patent and Trademark Office no longer prepares new drawings. The corrected drawings are required in reply to the Office action to avoid abandonment of the application. The requirement for corrected drawings will not be held in abeyance.

## **EXAMINER'S AMENDMENT**

2. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Steven A. Carlson on 05/13/05. The application has been amended as follows:

### In the claims:

1. (Currently amended) An electro-optic modulator comprising an active material having a first state of transparency and of low reflectivity for one or more wavelengths and a second state of high reflectivity at said one or more wavelengths, wherein said active material reversibly switches between said first and second states by the injection

and removal of electrons from said active material by the application of an electric current, and wherein said active material in one or both of said first and second states is a salt of an organic free radical cation, wherein said injection and removal of electrons changes the reflectivity of said salt of said organic free radical cation.

3. (Canceled).

5. (Canceled).

14. (Canceled).

20. (Canceled).

21. (Canceled).

22. (Canceled).

24. (Currently amended) The electro-optic modulator of claim 1, wherein said ~~active material in one or both of said first and second states~~ salt of an organic free radical cation is a salt of an aminium radical cation.

25. (Canceled).

26. (Currently amended) A method of modulating an optical signal at one or more wavelengths, wherein said method comprises the steps of:

- (a) providing an input optical path;
- (b) providing an output optical path;

- (c) interposing an electro-optic modulator between said input and output optical paths, wherein said modulator comprises an active material having a first state of transparency and of low reflectivity at said one or more wavelengths and a second state of high reflectivity at said one or more wavelengths, and wherein said active material reversibly switches between said first and second states by the injection and removal of electrons from said active material by the application of an electric current, and wherein said active material in one or both of said first and second states is a salt of an organic free radical cation, wherein said injection and removal of electrons changes the reflectivity of said salt of said organic free radical cation;
- (d) providing an optical signal in said input optical path; and
- (e) reversibly switching said active material between said first and second states to modulate said optical signal in said output optical path.

28. (Canceled).

30. (Canceled).

39. (Canceled).

45. (Canceled).

46. (Canceled).

47. (Canceled).

49 (Currently amended) The method of claim 26, wherein said ~~active material in one or both of said first and second states~~ salt of an organic free radical cation is a salt of an aminium radical cation.

### REASONS FOR ALLOWANCE

3. Claims 1, 2, 4, 6-13, 15-19, 23, 24, 26, 27, 29, 31-38, 40-44, 48 and 49 are allowed. The following is a statement of the examiner's reasons for allowance. The present application relates generally to the field of optical shutters and switches. Regarding claims 1 and 26, the prior art fails to disclose that the active material in one or both of said first and second states is a salt of an organic free radical cation, wherein the injection and removal of electrons changes the reflectivity of said salt of said organic free radical cation. The claimed invention is therefore considered to be in condition for allowance as being novel and non-obvious over prior art.

4. The prior art taken either singly or in combination fails to anticipate or fairly suggest the limitations of the independent claims, in such a manner that a rejection under 35 USC 102 or 103 would be improper. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

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*Other Information/Remarks*

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Chun (U.S. Patent No. 5,037,169) discloses an optical switch that that changes between the first and second state by injection of electrons through a medium.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jack Dinh whose telephone number is (703) 605-0744. The examiner can normally be reached on M-T (8:30 AM - 6:30 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Georgia Y Epps can be reached on (703) 308-4883. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jack Dinh

  
Georgia Epps  
Supervisory Patent Examiner  
Technology Center 2800